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Could be coagulase-negative Staphylococcus a causative pathogen of chronic osteomyelitis in patients with diabetic foot?

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Background and aim: While cultures of superficial swabs often yield colonising organisms, those of deep tissue specimens are more likely true pathogens. The role of colonising microorganisms in infection management of diabetic foot ulcers with involved bone is a topic of interest. The aim of our study was to compare microbiology of wound swabs and bone specimens with a focus on coagulase-negative Staphylococcus (CoNS) in patients with chronic foot ulcer undergoing foot surgery due to suspected osteomyelitis (OM). **Methods:** 32 diabetic patients (5F/27M, mean age 60.1±10.9 years, mean DM duration 21.2±15.0 years) treated at a diabetic foot clinic for chronic foot ulcer who underwent foot surgery from March-Dec 2011 were included into the observational study. Wound swabs and bone culture collected concomitantly during foot surgery were evaluated. Suspicion of OM was based on standard criteria (clinical findings, X-rays and/or probe to bone testing). Surgery procedures included mostly toe amputation or bone resection in forefoot or hindfoot. Wound swabs (WS) and bone specimens (BS) were sent for aerobic culture and microbiologic findings were evaluated including antibiotics susceptibility. **Results:** Of 32 WS/BS pairs, negative microbiologic results were found more frequently in bone specimens to compare with wound swabs (28% vs 56%, $p < 0.043$). The most common isolate was CoNS found in 18 (56%) WS vs 11 (34%) BS. In 10/11 (91%) CoNS positive bone culture CoNS was the single isolate. In 9 (28%) of cultures CoNS was found identically in WS and BS, while missed in 9 (28%) of corresponding BS and in 2 (6%) of corresponding WS showing no concordance of CoNS finding between WS and BS ($p = 0.065$). Antibiotics susceptibility of CoNS in bone specimens showed in 10/11 (91%) of cultures resistance to beta lactam antibiotics and clindamicin, while in swabs susceptibility was usually not tested due to supposed colonisation. Of positive findings, polymicrobial flora was more frequent in WS (11/30, 37%) compared to BS (3/23, 13%), but of no significance. Only 7 of 32 pairs (22%) had completely identical culture results. The type of isolate based on stain was as follows: Gram-positive cocci in 18 (56%) vs. 17 (53%) cultures, Gram-negative flora in 1 (3%) vs. 3 (9%) cultures, both NS and mixed flora in 11 (34%) vs 3 (9%) cultures ($p < 0,03$) in WS and BC, respectively. **Conclusion:** In our study, resistant coagulase-negative Staphylococcus was frequently found in bone culture suggesting it could contribute to chronic osteomyelitis non-healing probably due to inappropriate antibiotic treatment guided by superficial swabs which are usually not tested for antibiotics susceptibility because of supposed colonisation of this isolate.